

ANGULATION AT THE SIGMOID.

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ANGULATION of the intestinal canal at the sigmoid is a pathological condition which we believe exists, but has not been described. The chief symptom of this condition is intestinal obstruction, and those of advanced years seem to be most liable to be affected.

By angulation *at* the sigmoid, we mean that the intestine is so bent upon itself, at either the upper or lower end of the sigmoid, that complete or partial obstruction to the passage of the fæcal current is established.

The sigmoid is firmly attached at both its proximal and distal ends, the descending colon above is quite freely movable, and the sigmoid itself is loosely attached. This permits the portion of bowel immediately above the point of firm attachment to drop down, and so draw on the firmly attached portion that an angulation results.

That this condition does actually occur, we believe is proven by the post-mortem recorded in our series of cases. These cases so closely resemble cases of volvulus that it is only natural that the question of diagnosis should be raised. Are not the cases here presented cases of volvulus? We believe not, for it seems hardly possible that a twisting of the mesentery, such as would necessarily accompany volvulus, could exist for so long a period as three weeks without causing either gangrene of the gut or a profuse exudation of serum in the peritoneal cavity. Neither of these existed in our cases.

Cases which have been diagnosed as volvulus may in many instances, we believe, really have been cases of angulation, for in not all is the condition actually seen. An operator makes the diagnosis of volvulus, opens the abdomen, and during the

manipulations, while approaching the suspected seat of trouble, hears a sudden gurgle and the intestinal contents pass on. Naturally, he feels he has released the twisted coil and that the diagnosis is confirmed. Would it not be more reasonable to believe that an angulation would so be overcome than that a twist would be undone?

Dr. Emil Reis (*ANNALS OF SURGERY*, October, 1904), in a very interesting article entitled "Mesosigmoiditis, and Its Relation to Recurrent Volvulus of the Sigmoid Flexure," relates the history of a case, and describes the conditions found during the operation. He says:

"The sigmoid was not twisted when the abdomen was opened, but a slight impulse given to the upper half of it sufficed to make it drop upon the lower half." From this description we can see no direct evidence in this case; the anatomical condition described was nearer an angulation, although by manipulation it could be converted into a volvulus.

Angulation at the sigmoid may occur at either its proximal or distal end, as these points are comparatively fixed by a short mesentery. In the one case the sigmoid is empty, as shown by the autopsy, to be recorded, and in the cases where the angulation is at the lower end the sigmoid is dilated. This was probably the condition in Case I, although before operation the symptoms and examination pointed to a probable intussusception. That this was not the cause was shown at the operation.

CASE I.—Mrs. B., aged forty-nine years, was admitted to the Methodist Episcopal Hospital in the service of Dr. George R. Fowler, with the following history: Patient had been a healthy woman; family history negative; four days ago, without apparent cause, she began to feel a discomfort in the abdomen, associated with constipation. While stooping forward she had a sharp pain in the middle of the back and lumbar region. Patient was given cathartics and enemata. The latter at first brought away a few small particles of fecal matter. Meteorism progressed until the belly became greatly distended. During twenty-four hours before admission, vomiting appeared, but was not stercoraceous. There

had been a good deal of abdominal pain. Rectal examination revealed high up in the rectum a ridge, which was taken to be the end of an intussuscepted intestine. No tumor could be made out.

Operation through a median incision failed to disclose any tumor mass. The entire intestinal tract was greatly distended, the cæcum reaching nearly the median line. The median wound was closed, a second incision made in the right inguinal region, and the cæcum lifted into it was there sutured so as to produce an artificial anus. There was some discharge of feces and gas immediately, but not any great quantity for thirty-six hours. The next morning, after the free discharge from the artificial anus, there was a free normal rectal movement. After this very large amounts were passed per rectum. The case progressed favorably, and on October 23 the artificial anus was closed. The patient made a good recovery. On account of the general laxity of the abdominal wall, patient was advised to continuously wear an abdominal bandage. This she did not do.

After her discharge from the hospital, she went about her work, and for some time suffered no discomfort, but later a ventral hernia developed at the site of the artificial anus. I saw her on several occasions when signs of strangulation were present, but was able to reduce the mass. On one occasion, three years later, this became strangulated and irreducible, and operation was undertaken. The intestines were firmly matted together in the sac, and it was with great difficulty that the mass was reduced and the operation completed. At the time, examination failed to reveal anything in the abdomen to account for the previous obstruction.

CASE II.—This case was presented in the person of Mrs. H., sixty-two years old, who was seen in consultation with the late Dr. Bowser. The history was of complete obstipation for three weeks. For a number of years she suffered with constipation, and for this continually took cathartics. During the three weeks no movement was obtained from the use of frequently repeated enemata and the administration of cathartics. During this time there had been a very general increase in distention and no vomiting until the day of examination. On examination we found a greatly distended abdomen, especially in the lateral parts. The patient was very weak and pulse feeble and rapid; no tenderness

over the abdomen, and at no point could a tumor or sense of resistance be felt. She was removed to St. John's Hospital, and under cocaine anæsthesia a right lateral colostomy done, using the cæcum, which was greatly distended. The bowel was brought through the muscle and sutured, by a number of silk sutures, to the skin. An immediate opening was effected; this gave rise to a profuse discharge of liquid fæces, which continued almost without interruption for two days. At the end of eight hours, much to our surprise, she had a normal evacuation of the bowels. From this time on, at irregular intervals, the discharges from the artificial anus were supplemented by normal bowel movements. She made a good recovery and went to her home. Nothing was heard from her until February, 1899, when she came complaining of a prolapse of the bowel at the artificial anus. This could easily be reduced. Operation for the closure of the opening was advised and refused. On the morning of May 19 following, I was summoned to her home, and found that the prolapse had recurred and that it could not be reduced. The cæcum had herniated through the opening made in it for the artificial anus, and in the parts projecting, the openings of the appendix and ileocecal valve could be plainly seen; in fact, it was an intussusception passing out through the artificial anus. The parts had become so swollen and œdematous that reduction was impossible. Operation was now consented to, and she was removed to the Norwegian Hospital and the following operation performed: An elliptical incision was made about the opening, including about a half-inch of normal skin. This was carried through the muscle and peritoneum, and the mass entirely freed and lifted out of the abdomen. The opening in the cæcum was then enlarged so that the mass could be easily reduced. After reduction, the rent in the side of the cæcum, being the opening made for the artificial anus, was closed by silk sutures. The abdomen was then thoroughly explored for the cause of the original obstruction, and no tumor, adhesions, or band of any kind could be found. The external wound was completely closed. Healing was per primam, and a complete recovery followed, the patient continuing to have normal bowel movements.

These cases caused me to reflect on the probable cause of the obstruction, and we advanced the theory that with the advance of age and general relaxation of tissue the sigmoid

became more movable than normal, that the continued use of saline and other cathartics further relaxed the tissues and increased the amount of fluid discharge in the sigmoid. The intestine, borne down by its own weight, fell into the true pelvis and, dragging on the fixed upper end of the rectum, produced an angulation at that point. Now, as further efforts to move the bowels produced increased peristalsis from above, this angulation would only become more acute and complete. Rectal enemata failed to pass the point and only the injected fluid would return. In both cases rectal examination had failed to discover any mass, but in the upper pelvis could be felt the downward pressure of distended intestine.

This was only a theory and could not be verified.

CASE III.—In the fall of 1902, I saw, in consultation with Dr. Frank W. Shaw, a lady, seventy years of age, a constant user of saline and other cathartics for many years, who suddenly developed obstructive symptoms. She became much distended; no fever; pulse quite feeble and rapid; some nausea after the fourth day and pain at intervals, very sharp and acute, apparently from peristalsis due to castor oil, which had been freely administered. Enemata had been given with no result. The question of probable carcinoma was raised and operation considered. Having in mind the two cases above mentioned, I advised high elevation of the hips and repetition of the water enemata. This with the hope that, if the theory were correct, the distended sigmoid would be displaced by gravity from the pelvis, and that the water in the rectum would assist in overcoming the angulation. After about six hours our efforts were rewarded by a free movement from the bowel. During the next twenty-four hours the amount of fluid fecal matter passed was astonishing. This continued for three days. The patient made a good recovery, and has had no recurrence of the trouble.

This case resembled the other two in the previous history and large discharges after the obstruction was overcome, and the result seemed to justify the diagnosis.

During the past year we believe the diagnosis has been substantiated by autopsy.

CASE IV.—Through the kindness of Dr. Archibald Murray, I am enabled to report the following case: Man, aged about seventy years, was ill with pneumonia when he developed symptoms of intestinal obstruction with faecal vomiting. His condition from the pneumonia was so grave that operation could not be considered. At autopsy the large and small intestine were found greatly distended with fluid faecal matter, the amount of fluid in the intestines being enormous. The descending colon, by the weight of the fluid contained, had been dragged towards the pelvis and angulated the gut at the juncture of colon and sigmoid. There was no twist or band to obstruct; it was the direct result of traction against a fixed point. The rectum and sigmoid were empty.

CASE V.—In April, 1905, a man, fifty-five years of age, was admitted to my service in the Long Island College Hospital. He gave the following history: For a number of months he had suffered from recurrent attacks of obstinate constipation, which when relieved were followed for several days by profuse faecal discharges. He was not very intelligent, and an accurate history could not be obtained. For two weeks previous to admission he had had no movement of the bowels, appetite was lost, and flesh and strength were very much reduced. The abdomen was somewhat distended; careful examination revealed no point of tenderness and no tumor. Rectal examination revealed an empty bowel, and at about four inches above the sphincter an obstruction. To the touch this gave the impression that a stout band was drawn across the bowel at that point. The finger on removal showed no trace of blood, mucus, or faecal matter.

Exploratory operation was performed before a class of about fifty students from the college, together with the family physician and my assistants. A diagnosis of carcinoma of the sigmoid had been made, based principally on the loss of flesh. On opening the abdomen the small intestine was found to be only partially distended, but the large intestine to the left iliac fossa was greatly dilated.

Examination failed to disclose the mass we were looking for, but did show very plainly that the cause of the obstruction was an angulation at the lower end of the sigmoid. Tracing the bowel downward from the colon it passed deeply into the pelvis

and then rose again to the point of attachment of the intestine near the ileosacral joint. At this point there was a distinct bending of the bowel upon itself, so that a complete obstruction was created, and the intestine beyond was entirely empty. This was satisfactorily demonstrated to all present.

On lifting the sigmoid from the true pelvis the contents of the gut immediately passed into the rectum. At the point of obstruction there was no band or adhesion of any sort. In the folds of the mesosigmoid, which was very long, were a number of recent adhesions. These were easily broken down. The intestine was held well out of the pelvis by my assistant, Dr. W. B. Brinsmade, while I sutured the external surface of the mesosigmoid to the parietal peritoneum covering the iliacs, by several layers of catgut sutures. The abdomen was closed. The next day a normal movement of the bowels occurred, and from then until his discharge from the hospital there was no more trouble. valescence was retarded by a sharp attack of pneumonia which developed on the second day and ran a course of seven days. He was discharged at the end of the third week much improved in general condition and with the constipation entirely overcome.

In this case we had presented a typical case of angulation which was easily and satisfactorily demonstrated to a large number of spectators.

Two other cases of obstruction, which seem to belong to this class, treated by artificial anus and given complete relief followed by natural movements of the bowel, have come under the writer's observation, but could not be followed to ultimate cure.

These cases resemble very closely cases of new growth in the large intestine, volvulus at the sigmoid, and also cases of mesosigmoiditis as described by Ries. How shall we differentiate them? In cases of carcinoma, we have the previous history of constipation and general loss of flesh and strength, with often the sudden onset of obstructive symptoms. Carcinoma of the large intestine is most apt to occur in the upper or middle segments of the rectum; by rectal examination the mass can be felt, and the withdrawal of the finger is followed by the escape of mucus and blood. In other cases the growth

is at either of the flexures of the colon, and can usually be felt or the distended intestine cannot be traced to the sigmoid.

Cases of volvulus of the sigmoid naturally give about the same symptoms and, unless very marked, would probably give way to the same treatment as indicated in cases of angulation. Where volvulus is a symptom of mesosigmoiditis, we have usually a history of repeated attacks of obstruction, and of inflammatory symptoms antedating these attacks. These patients usually suffer with backache, referred to the coccyx, or pain across the lower part of the abdomen; possibly discharges of pus and mucus from the rectum, and on rectal examination may show a diffuse infiltration of the paraproctical tissue.

In cases of angulation of the sigmoid, there can be felt by rectal examination nothing but the pressure of distended intestine above the pelvis. The rectum is empty, usually not dilated, and the withdrawal of the finger is not followed by any discharge whatever. These patients usually show no loss of flesh nor change in their general health. The symptoms sometimes come on slowly, as in Case II, or suddenly, as in Case III.

Treatment.—The use of cathartics is to be advised against until some evidence of faecal matter in the stools is present, then the use of castor oil would seem to be the least objectionable. If the patient's condition will permit, rectal injections, with the patient practically in the knee-chest position, may be tried, and in some cases will be effective. If this fail after a few attempts, or the patient's condition is poor, operation for the production of an artificial anus, using the caecum, is to be done. This may be performed under either local or general anaesthesia. The bowel should be immediately opened. After two or three months, if normal rectal movements have been established, the artificial opening may easily be closed.

A somewhat similar condition is described by Walzberg (*Arch. f. klin. Chir.*, Band lxvi) as occurring in the upper intestine after operations. He describes it as acute duodeno-jejunal intestinal obstruction. Cases following operation will

sometimes pursue a normal course, except for the continuation of vomiting for several days, or this may not occur for two or three days, when it will appear and continue, and be followed by profound prostration. Examination will reveal the area over the stomach markedly distended, the outline of the organ being visible. There is usually little or no nausea; the vomiting of large quantities of fluid occurs at long intervals and contains more or less bile. From a clear greenish color at first, it soon becomes darker until it becomes a dark brown. Autopsy in such a case showed no peritonitis. The stomach and duodenum were greatly distended and the remainder of the intestine empty, but displaced downward into the pelvis. On raising the omentum and transverse colon, the duodenum was found greatly distended above the point where it passes under the parietal attachment of the mesentery. The base of the mesentery crossed over in front of the gut in the form of a three-inch band, and was firmly held in this position by the displaced intestines. The mechanism of this condition is explained by a primary dilatation of the stomach, the atonic intestines are pressed downward, the mesentery dragged upon, and the duodenum is pinched between it and the vertebræ. These cases are best treated, according to Mayo-Robson, by frequent lavage; and if the symptoms do not subside, the patient should have the pelvis well elevated, or the patient turned on the side. In some cases the supine position may give relief. Morphine is of service, and in my hands has, I believe, saved several cases. The use of cathartics only tends to increase the pressure from above and make the condition worse.

I mention this condition with the one we have been discussing because I believe the mechanical conditions are similar, and the treatment in each case must be directed to relief of the pressure from above, and not attempt to force the contents of the upper bowel downward by cathartics.